UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/533,165 | 04/29/2005 | Michael Hohne | 22204-100571 | 9284 |

28886 7590 10/25/2007

CLARK HILL, P.C.
500 WOODWARD AVENUE, SUITE 3500
DETROIT, MI 48226

| EXAMINER | |
|---|---|
| WONG, TINA MEI SENG | |
| **ART UNIT** | **PAPER NUMBER** |
| 2874 | |
| **MAIL DATE** | **DELIVERY MODE** |
| 10/25/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/533,165 | HOHNE ET AL. | |
| | Examiner | Art Unit | |
| | Tina M. Wong | 2874 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *12 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,2 and 6-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 6-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 November 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 October 2007 has been entered.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2003/0209655 to Wang.**

In regards to claims 1 and 2, Wang discloses a multilayered sensor (Figure 4c) through which an optical waveguide (410) is passed, the optical waveguide defining a structure in which the optical waveguide is contained, the structure consisting of a front layer (471) and a rear layer (472), which transmit the external application of force directly on to the optical waveguide, the structure further including clips and ribs (471a & 472a). Furthermore, Wang teaches the clips for deforming the optical waveguide in a curved path, over each of the clip protrusions as seen in Figure 4C as well as bent by an external application of force. But Wang fails to specifically state the ribs to retain the waveguide in a single plane. However, referring to Figure 4C, assuming the

sheet of paper is the single plane, the ribs keep the waveguide pushing towards to top of the sheet of paper, which is the single plane. Therefore, although not explicitly stated, it can be observed from the Figure that the ribs and clips retain the waveguide a curved path by pushing up towards the top of the paper or pushing down towards the bottom of the paper.

**Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2003/0209655 to Wang, as applied to claim 1 above, in view of U.S. Patent 5,913,245 to Grossman.**

In regards to claims 6 and 7, although Wang does not specifically disclose an adhesive layer applied to the edges of the front and rear layers, Grossman discloses a similar multi-layered sensor, deformed by a force to include an adhesive for joining together components. Furthermore, by applying an adhesive around the outside of the sensor would prevent unwanted external factors from damaging or altering the sensitive fiber and sensor. Therefore, since Wang is silent on the detail of joining the components, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have included an adhesive around the edges of the front and rear layers for the reasons indicated above.

In regards to claim 8, Wang discloses all discussed above and further discloses a first layer (layer between the waveguide and the second layer) through which the optical waveguide is passed and a second layer (471) which abuts the first layer. But Wang fails to specifically disclose the first layer to have a greater compressibility than the second layer. However, Grossman does disclose "suitable values of flexibility and compressibility can be determined by those skilled in the art by conventional engineering and development procedures." Furthermore, it would be desirable for the first layer to have a greater compressibility than the second layer

since the force/pressure is applied directly to the first layer to deform the fiber in order to more easily obtain the amount of force/pressure applied. Since Wang and Grossman are both from the same field of endeavor, it would have been obvious at the time the invention was made to a person having ordinary skill in the art for the first layer to have a greater compressibility than the second layer.

In regards to claim 9, Wang discloses all discussed above and further discloses a third layer (472), where the first layer (layer between the waveguide and the second layer) is disposed between the second (471) and third (472) layer. But Wang fails to specifically disclose the third layer to have a lower compressibility than the first layer. However, Grossman does disclose "suitable values of flexibility and compressibility can be determined by those skilled in the art by conventional engineering and development procedures." Furthermore, it would be desirable for the third layer to have a lower compressibility than the first layer in order to protect the waveguide from bending too far, past the bending radius of the waveguide, causing damage to the waveguide. By choosing a layer with a lower compressibility, this can be prevented. Since Wang and Grossman are both from the same field of endeavor, it would have been obvious at the time the invention was made to a person having ordinary skill in the art for the first layer to have a lower compressibility than the first layer.

In regards to claim 10, Grossman discloses the waveguide (303 & 304) to be passed though the sensor (76 & 78) at least twice. (Figure 12)

In regards to claim 11, Grossman shows (Figure 9) the optical waveguide (58) to be passed through the sensor (60 & 62) in a wave-like configuration. In Figure 9, it can be seen that the waveguide is weaved through the monofilaments and threads to form a wave-like

configuration. Furthermore, Wang also shows (Figure 4c) the optical waveguide to be passed through a sensor in a wave-like configuration.

**Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,429,421 to Meller et al.**

In regards to claim 12, Meller et al teaches a first layer (10) (Figures 1A and 1B together to form Figure 4B, a single layer) extending in a longitudinal direction and including a plurality of clips (40 & 50) mounted therealong, the plurality of clips spaced apart from one another longitudinally and offset from one another in a lateral direction, an optical waveguide (80) retained solely by the plurality of clips, the optical waveguide extending through the plurality of clips in a curved path and a second layer (Figure 6, 190) facing the first layer and selectively transmitting an external application of force to the optical waveguide. But Meller et al fails to specifically teach the second layer to include ribs for deforming the optical waveguide towards the first layer in response to an impact in order to change the amount of light carried per unit of time through the optical waveguide. However, the clips in the first layer, while retaining the optical waveguide in a curved path could also perform the claimed rib functions since the clips/ribs would also inherently cause the waveguide to deform when a force is applied since the force to the device would cause the entire device to compress and therefore, compress the clips/ribs into the waveguide. By this deformation, the light traveling through the waveguide would inherently be altered and the amount. Since the placement of the clips/ribs on either the layer would perform the same function, it would have been obvious at the time the invention was made to a person having ordinary skill in the art for the placement of the ribs to be on the first or second layer, depending on the desired final configuration of the device.

In regards to claim 13, although Meller et al does not specifically teach the first and second layers to be joined together by an adhesive, is it clear from the Specification of Meller et al that the first and second layers are formed together into a single integral piece. Since adhesive is a commonly applied technique of joining together two components, it would have been obvious at the time the invention was made to a person having ordinary skill in the art for the first and second layers to be joined together by an adhesive.

***Response to Arguments***

Applicant's arguments filed 12 October 2007 have been fully considered but they are not persuasive. Applicant argues Wang does not teach clips for retaining the optical fiber in a curved path. However, the Examiner disagrees. As force is applied (and held for a period of time) to front layer of Wang, the clips do retain the optical fiber in a curved path for that period. Applicant's claim language does not preclude the clips for retaining the optical fiber in a curved path at all times, nor does the claim language preclude the clips to retain the optical fiber in a curved path by an application of an external force. Therefore, the Wang reference meets the limitations of the claim language as written in claim 1.

Applicant further argues the clips and ribs are two distinct structural elements and the clips retain the optical waveguide without the need for any other structural element. However, this argument does not reflect the claim language. Applicant does not specifically claim the clips and ribs to be two distinct elements not does Applicant claim the waveguide to be retained only by the clips.

Lastly, Applicant argues the Wang reference does not teach the clips for retaining an optical waveguide in a curved path and the ribs for deforming the optical waveguide in a single

plane. However, the Examiner disagrees. As stated above, Wang does retain the optical waveguide in a curved path during the operation of the device when an application of force is applied. Furthermore, as stated in the previously mailed Office action, mailed 10 may 2007, Paper number 200705, referring to Figure 4C and assuming the sheet of paper is the single plane, the ribs keep the waveguide pushing towards to top of the sheet of paper, which is the single plane. Therefore, although not explicitly stated, it can be observed from the Figure that the ribs and clips retain the waveguide a curved path by pushing up towards the top of the paper or pushing down towards the bottom of the paper.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Wong whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tina M Wong
Primary Examiner
Art Unit 2874